

The Builder.

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In the course of our practice we were led, some time since, to give more than ordinary attention to the arrangement and construction of Farm Buildings, an interesting subject for inquiry which has not been pursued to the extent it deserves, and in going over a number of farms for information were astonished at the miserable condition in which the greater number of them were found. The buildings are ruinous; ill contrived; placed without any regard to convenience, still less symmetry; and erected in most cases regardless of known expedients for lessening labour and saving expense in the long run. Even where there has been a willingness wisely to invest money in erecting new buildings or improving old ones, incompetent persons have in many cases been employed, and the result is very unsatisfactory.

Those who would efficiently design farm buildings, or any buildings, must first make themselves well acquainted with the purpose to which the buildings are to be applied and the objects which are sought to be achieved. The aim of the architect should be to give all the accommodation required at the least possible expense consistent with sound construction,—to take advantage of all natural facilities, as for drainage, supply of water, &c., and to see that the cost of the erections be not unnecessarily enhanced, as by the construction of buildings that are useless, or by giving to those that are requisite unnecessary dimensions. In the feeding sheds, for example, the animals must not be cramped,—yet a greater width than is needed must be avoided as entailing larger scantlings than a less width would: what is wanted is the just enough and no more. Until recently farmers have been contented to go on as their fathers did, and they jeered and discouraged, rather than aided, those who made experiments or attempted improvements. Science, however, has gradually conquered prejudice, and gained a recognition of her importance. The farm is seen to be a great laboratory wherein various chemical and mechanical processes are being performed, successfully or not according to the skill of the operator. The farmer now wants sound advice, and is willing to follow it: faith has taken the place of scepticism and the disposition to scoff. He must strive to get knowledge,—at all events take care to give it to his children: and we look for the establishment of schools throughout the country specially arranged to give an agricultural education.

The Agricultural College at Cirencester has not yet produced those striking results which might have been looked for: the cause of this it might be useful to inquire into, but not now. Such institutions, however, properly managed, are much required, and might be made to do good service. Farmers, we repeat, must keep pace with the world; must obtain knowledge and use it; and this is beginning now to be felt pretty extensively.

The produce of the land might be immensely

increased. In the item of turnips, for example, we find Mr. Proctor, in some remarks on the cultivation of this root (laid before the "Chippenham Farmers' Club"), pointing out the small number grown per acre on the average,—the loss sustained through not using a full dressing of manure with this crop. Instead of trying to obtain larger and better crops, farmers have been satisfied with producing moderate crops at as little expense as possible.*

The use of machinery on farms is rapidly increasing: those who neglect the advantages it offers will find themselves behind their neighbours.

The American reaping machine, for which the great medal has been given by the Commissioners to Mr. McCormack, promises to be of great value. As at present arranged it is drawn by a pair of horses, requires two men to work it, and will cut at least 15 acres of corn in a day. The immense importance in such a climate as ours of harvesting with rapidity, at the right moment, will readily be seen. The loss which now constantly occurs through the difficulty of getting together a sufficient number of labourers at a time when all are wanting them (and which by the way keeps floating about as a loose pauper population that would otherwise, it may be expected, be absorbed into other and better courses), is well known.

Mr. Mechi, who, however his experiments may turn out in a pecuniary point of view, has done much to advance scientific farming, has given the reaping-machine a trial, and writes thus upon it:—"I have arrived at the following conclusions:—That it will act perfectly on level land, with a standing crop. That it will cut from 10 to 16 acres per day, according to circumstances. That the quantity cut depends more on the activity and strength of the man who has to remove it by rake from the board on which it falls. It is hard work for a man to remove one acre and a quarter per hour. That our open furrows and deep water furrows are much against the perfect action of the machine. That the paddle-wheels do not in any way beat out or injure the corn. That certain trifling modifications in its details will be required where (as in my case) the straw is very long. That it will cut laid corn where it falls towards the machine. That where it falls from it, it is desirable to cut such portions by hand. That a proportionate number of hands to bind the cut corn will be required, according to the crop." And he concludes by expressing his conviction that all our reaping will soon be done by horse or steam machines. McCormack's machine, as it seems to us, may easily be improved, so as to make the quantity cut not "depend on the activity and strength of the man who has to remove it by rake from the board on which it falls."

* Mr. Proctor says,—"The ploughing, sowing, hoeing, and expenses are just the same on a good and bad crop, the difference being the cost of the manure; and it would be decidedly more profitable to have a good crop on seventy acres, at the entire cost of good dressing of manure, than to have 100 acres of middling turnips with half a dressing. You save all the expenses of working thirty acres, and can leave your seeds for a second year on that portion. The quality of a turnip properly manured is also much better than of one stunted in its growth, and you will find your cattle do better on the same weight; it is quite astonishing how much difference there is in this respect, and particularly where a portion of bone has been applied. As a general rule with manures, it is, perhaps, sufficient for me to advise that you must not plant more turnips than you manure well, and that the best application of fold-yard manure is an equal distribution of what you make over the whole of your land; and if you are short in the quantity required to properly manure your crop, it should be made up with bone, super-phosphate of lime, or guano, according to your judgment, bearing in mind that bone is a slowly decomposing but permanent manure, super-phosphate is bone in a quicker state of decomposition, and guano is more of a stimulant."

In the Fine Arts Court of the Great Exhibition there is a very elaborate model of Mr. Mechi's farm, Tiptree-hall, made by Mr. H. S. Merrett, which may be very usefully studied. It is constructed carefully to a scale of 4 feet to an inch, and shows every detail inside correctly, including the steam-engine, which works eight pieces of agricultural machinery. The buildings, too, are all removable, so they can be closely examined.

Near to this is a model of a farm at Wark, in Northumberland, erected by Mr. Bulman, for 930 acres, where about one half of the turnip crop (200 acres) is consumed upon the ground by sheep, and the other half by cattle, in the courts and in feeding-boxes. There are generally 100 cattle fattening at one time. The threshing-machine is propelled by water collected from springs in the higher part of the farm. The steading and stack-yard occupy 3½ acres: the site was made level before the buildings were commenced, retaining only sufficient declivity to allow the water to run off.

Generally speaking, it is the most advisable course to level the ground; but where the declivity is very great the buildings may be placed across the direction of the declivity.

For the sake of comparison with others, we will give the dimensions of the principal divisions in Mr. Bulman's farm:—The straw barn is 40 feet by 18 feet. The corn barn, 61 feet 6 inches by 19 feet, including store-room at one end, with access to grinding and chaff-cutting machinery, &c. &c., over thrashing-machine wheel-pit. The cart shade is 75 feet by 18 feet, with seven openings, each made to hold two carts. The upper barn, 33 feet 6 inches by 18 feet, containing thrashing-machine, with door leading to stack-yard, whence the corn is brought from the stacks by carts. The granary, 120 feet by 18 feet, over cart-shade, tool-house, &c. The loose boxes are 18 feet by 18 feet, with granary over them for horses' corn. There is a tube through which it is passed for use into a chest in the stable. The work-horse stable, 144 feet by 17 feet, which contains stalls for twenty-four horses. There are feeding-boxes for twenty-seven cattle: each compartment is 12 feet by 10 feet. In front, the roof projects over small depôts for turnips, where the cattle are fed through openings in the wall. Each box has a turnip-manger, hay-rack, and water-trough. There are eight cattle shades, averaging 35 feet by 15 feet; the courts, 45 feet by 35 feet, including open feeding shades, 45 feet by 9 feet, with turnip houses between feeding-shades, 45 feet by 10 feet. Regulating cistern, 3 feet by 2 feet, and 2 feet deep, with ball and ball-cock, supplies water to thirty-eight troughs, throughout the steading. Such troughs must all be levelled carefully, so as to obtain a proportional quantity of water in each. The stacks are 18 feet in diameter, and are so placed that any particular stack can be taken out at pleasure.

In the same department of the Exhibition are two models of Farm-buildings by Mr. Baxter, which are on the "concentrated principle," wholly roofed over, including the dung or mixed yard. With reference to the latter the designer makes the following remarks in a printed description of his models which he has issued:—

"We think it will be found that a covered shed for the manufacture of manures, is one of the most valuable and necessary departments of modern farming. Here mould, ashes, and